

Unit Title: Spinning in Space	Term 2, 2009
Domain(s): <i>Interpersonal, Science, ICT, Thinking Processes, English, Maths</i>	
Year level: 3 & 4	Duration of unit: 10 weeks
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The Big Idea: The Earth's rotation causes day and night.	
Understandings	Focus Questions
The relationship between day and night The rotation of the Earth The shapes, sizes and movements of the Earth, Sun and Moon The place of the Earth in time and space The interactions between the Earth and its atmosphere	How does day and night occur? How do the seasons occur? How are shadows made?

VELS Standards		
Domain	Standard	Outcomes
Interpersonal	Building Social Relationships Working in teams	<i>Demonstrate respect for others</i> <i>Understand and abide by team protocols</i>
English	Reading	<i>Use strategies with information in texts</i>
Mathematics	Space	<i>Locate places on maps and diagrams, using compass points and grid references</i>
Science	Science Knowledge Science at Work	<i>Use appropriate scientific vocabulary</i> <i>The relationship between day and night, rotation of the Earth</i> <i>Plan, design and conduct collaboratively on experiments</i> <i>Describe and develop a fair test, identify and control variables</i> <i>Use simple measuring equipment, methods to record observations, comment on trends</i>
ICT	ICT for creating ICT for visualising thinking	<i>use ICT tools to capture and save images, simple editing</i> <i>use different data types and tools to create information products for different purposes</i> <i>list ideas, order in sequence, identify relationships</i> <i>retrieve saved strategies and edit them</i>
Thinking Processes	Reasoning, processing, inquiry	<i>Apply thinking strategies to organise information</i> <i>Provide reasons for conclusions</i>

Resources
<i>What materials are available to us? (books, guided reading books, CD ROM, videos, charts, websites, etc)</i> <i>Do we need to do any reading about this topic?</i> <i>Do we know any experts in the area?</i>
Primary Connections 'Spinning in Space' Stellarium astronomy program on PC (see blog) Magic School Bus DVD and books travelling Planetarium Monash Science Centre Pack – Night and Day (Carlie)
Shared Experiences
<i>What excursions would expand on our understandings?</i> <i>What excursions/incursions are available?</i> <i>Do we know any experts in the area?</i>
travelling Planetarium Monash Science Centre 'Our Place in Space' Monash Clayton campus (Carlie) Russell Walley telescope experience Astronomical Society of Victoria
ICT
<i>What ICT activities would further enhance our unit?</i> <i>Consider not only on the computer, but also internet activities, using the camera, video, audio, IWB, podcasting, blogging, wiki, iPods, game consoles, film camera, etc</i> <i>(Refer to the ICT Scope and Sequence)</i>
Programs: Stellarium on IWB, Kidspiration for mind-mapping, Kahootz for 3D design Online: Enchanted Learning, Hubble Space Telescope Website (images), NASA website Digilearn: TBC (some in PC 'Spinning in Space') Tools: Using dig cameras to record shadows, video to record demo of day and night
Thinking Processes
<i>What thinking processes would suit this unit, activities, experiences?</i> <i>(Refer to the Thinking Processes Scope and Sequence)</i>
Habits of the Mind Thinking Hats Visual Organisers – Mind mapping Rocket writing

Consider the following skills when planning your unit...

Research Skills	Communication Skills	Thinking Skills	Cooperative Skills
➤ List ➤ Classify ➤ Compare and contrast ➤ Locate information ➤ Listen and observe ➤ Summarise	➤ Explain ➤ Elaborate ➤ Justify ➤ Persuade ➤ Respond ➤ Visually represent ➤ Role play ➤ Question ➤ Share ideas	➤ Analyse ➤ Consider ➤ Infer ➤ Hypothesize ➤ Predict ➤ Recognise bias ➤ Self assessment ➤ Reflect ➤ Thinkers keys ➤ Question matrix ➤ De Bono's hats ➤ Lotus Diagram	➤ Follow directions ➤ Share ➤ Work independently ➤ Paired work ➤ Group work ➤ Discussions ➤ Work to a timeline ➤ Help others ➤ Respect opinions

Piecing the unit together
Tuning In
<p><i>How can we engage children in this topic? How can we start with a 'bang'?</i></p> <p><i>What media can we use?</i></p> <p><i>How can we assess students' prior knowledge?</i></p> <p><i>How can we cater for students' that already have a lot of knowledge on the topic?</i></p>
<p>Book: <i>My Place in Space</i></p> <p>Sleepover to observe, day/night journal</p> <p>Video of day/night, space excerpt</p> <p>Music/TV: space related – Star Wars, War of the Worlds, Star Trek, Space Odyssey 2001, The Jetsons Lost in Space etc.</p>
Assessment
<p><i>Consider peer-, group-, self-, teacher-assessment of knowledge</i></p> <p><i>Skills understandings using checklists, observations, oral and recorded work, portfolio, etc</i></p> <p><i>Self-assessment – weekly reflection, end of semester assessment</i></p>
<p>Add assessment piece to Primary Connections assessment</p> <p>Homework for the term: Project poster broken into small tasks for each week's homework</p>
Portfolio Pieces for the term
<ol style="list-style-type: none"> 1. Integrated: Shadow stick/ Model sundial/ Model to demonstrate the rotation of the earth 2. English: Space related Narrative using the PM writing checklist (2 pages dbl. spaced) 3. Maths: Space-related measurement Maths 300 project (Michelle G. to investigate) 4. Kid's choice: choose the best snapshot written during the term and reflect. 5. Semester reflection: save pretest 'What Causes Day and Night?' do again at end of term, and have them reflect on the additional understandings gained over the term.
Making Conclusions
<p><i>How can we assist students to pull it all together?</i></p> <p><i>What curriculum processes will help here?</i></p> <p><i>How can we see if they are making connections?</i></p>
<p>Exhibition night/ afternoon to display posters and models for parents. Have a feedback sheet for parents to give positive feedback.</p>
Related Experience
<p><i>How can we further students' understandings and experiences about this topic?</i></p>
<p>See excursions and extra curricular activities as above</p>
Reflection and Action
<p><i>How can we empower students to act on what they have learned?</i></p> <p><i>How can we ensure this knowledge is long-lasting?</i></p>
<p>Rich, authentic activities as shown above</p> <p>Enquiry based learning</p> <p>Open-ended activities</p>
Glossary
<p>day, night, seasons, rotation, tilt, Earth, moon, Sun</p>

Week by Week		
Week	Activities	Type of activity *
1	brainstorm ideas about day and night • complete 'Day and Night: What do you think?' (Resource sheet 1) • discuss ideas and questions for a TWLH chart • create and label a diagram of the Sun, Earth and Moon • contribute to a list of words to develop a word wall. 'Day and Night: What do you think?' (Resource sheet 1)	Whole Indep
2	use spherical objects to explore why the Sun and Moon appear to be the same size when viewed from Earth • investigate the sizes and positions of the Sun, Earth and Moon • view images of the Sun, Earth and Moon.	Whole Group Indep
3	Session 1 Chasing shadows • play shadow tag • observe and discuss changes in shadows around the school.	Whole Group Indep
4	Session 2 The travelling light show • compile a list of light sources • explore how light travels in straight lines • investigate the position and size of shadows. <i>Incursion – Monash Science Centre</i>	Whole Group Indep Incursion
5	• model the spinning of the Earth on its axis as it orbits the Sun • create a role-play to represent their understanding of the cause of day and night.	Whole W'shop Group
6	Session 1 Planning it out • plan an investigation • select variables to be changed, measured or kept the same.	Whole Group
7	Session 2 One o'clock, two o'clock... • conduct an investigation • observe and record results. <i>Incursion/Excursion – Planetarium or Starlab</i>	Whole Group Excursion
8	Session 3 Shadows rock! • create a table with measurements of shadows • create a column graph to represent and compare measurements • discuss and summarise results of investigation. 'Shadow stick investigation planner' (Resource sheet 2)	Whole Group Indep
9	• review and discuss the unit • review 'Day and Night: What do you think?' (Resource sheet 1) • construct a poster to represent their knowledge and understanding of the Sun, Earth and Moon, and day and night • reflect on their learning during this unit. 'Day and Night: What do you think?' (Resource sheet 1)	Whole Group Indep
10	Complete/ Assessment/ Finishing posters, models etc. Exhibition for parents	Whole Group Indep

* Type of activity – Whole; Small group; Independent; Workshop; Excursion